

ABSTRACT

It is an object of the present invention to provide an improved thermally-assisted recording system utilizing thermally activated readout.

More particularly, it is an object of the present invention to provide an improved optically assisted magneto optical recording (OAMR) media design.

In the present invention, the medium comprises a sequence of layers beginning most distant from the transducer with a substrate, reflector layer, dielectric layer, memory layer, exchange layer, readout layer, carbon overcoat and lubrication layer.

According to the present invention, the medium is characterized by a Co/Pt readout layer on a TbFeCo memory layer. This medium was chosen to provide a temperature-dependent coercivity which is intended to enhance and cooperate most fully with the operation of the thermally activated reads storage system. In a preferred embodiment of the invention, a Pt coupling layer is provided between the readout layer and the memory or write layer. This coupling layer preferably has a thickness of between 0 nm and 5 nm; preferably, the coupling is enhanced by providing a layer thickness of between 0.5 nm and 1.0 nm.

The disc of the invention can well be used in a thermally activated system wherein the read/write head includes an micro-recording coil with coaxial focused light (although the system is also compatible with a gap or pole magnetic recording head integrated with a light delivery source). Additionally, an aperture at the base of the slider can be used to define the size and shape of the optical spot incident on the media. During reading, the medium is heated to a temperature such that the uniformly magnetized read layer (which is typically magnetized by a separate bar magnet) replicates the domain structure of the underlying write layer of the addressed data track. The room temperature coercivity of the read layer is chosen so that it is not affected by the write layer, but is switched by the bias magnet. This two layer medium comprises, as specified above, a high coercivity write layer and an intermediate coercivity read layer. In reading, the read layer is written by the read optical beam from the write layer, thereby replicating the signal stored in the write layer to be read by the sensor.